IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants	: Schmitt, et al.
Serial No.	: To be assigned
Filed	: July 24, 2001
For	: METHOD FOR DEBUGGING FLOWCHART PROGRAMS FOR INDUSTRIAL CONTROLLERS
Examiner	: To be assigned
Group Art Unit	: To be assigned

Box Patent Application
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Express Mail Label No. EL 727968446US

Date of Deposit: July 24, 2001
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PRELIMINARY AMENDMENT

Sir:

Preliminary to examination on the merits, please amend the application as follows:

IN THE SPECIFICATION:

On page 1, before paragraph [0001.], insert: --Field of the Invention--.

On page 1, before paragraph [0003.], insert: --Background--.

On page 2, before paragraph [0010.], insert: --Summary of the Invention--.

On page 12, before paragraph [0045.], insert: --Brief Description of the Figures--.

On page 13, before paragraph [0046.], insert: --Detailed Description of the Invention--.

IN THE CLAIMS:

Cancel claims 1-25 without prejudice.

Add new claims 26 - 50.

26.   (New) A method for debugging programs for industrial controllers, wherein graphical elements are linked using an editor to form a motion control flowchart that can be visualized on a display, comprising the steps of:

a) preparing a debugging process based on the flowchart;

b) assigning suspend command to each graphic element;

c) commencing the debugging process;

d) continuing the debugging process until a suspend command is reached;

e) displaying the location of the flowchart element corresponding to the suspended command; and

f) proceeding to the next possible suspend command.

g) continuing steps d) through f) until the user reaches the end of the flowchart.

27.   (New) The method according to claim 26, wherein a task corresponding to a graphic element, that has been stopped by a suspend command, is continued with a task control mechanism of the run time system.

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28. (New) The method according to claim 27, wherein a user operates a resume command by the task control mechanism, thereby advancing the current suspend command.

29. (New) The method according to claim 27, wherein the task control mechanism of the run time system comprises breakpoint debugging and variable that can be pre-assigned by the user in the engineering system, further comprising the step of pre-assigning variables corresponding to breakpoints

30. (New) The method according to claim 29 wherein the variable pre-assignments in the task control mechanism are performed by programs of the run time system other than the task control mechanism.

31. (New) The method according claim 26, comprising the steps of:

   a) generating a structured textual language from the flowchart;

   b) converting the structured textual language into a processor-independent pseudo-code;

   c) loading the processor-independent pseudo-code into the controller;

   d) converting the processor-independent pseudo-code into executable processor code.

32. (New) The method according to claim 26, wherein a debugging interface is available to a user at the level comprising one of the group consisting of the structured textual language level, the pseudo-code level, and the processor code level.

33. (New) A method according to claim 26, wherein programming language commands are provided in the flowchart editor as a function of configuration of hardware associated with the industrial controller.

34. (New) The method according to claim 26, wherein additional graphical elements are generated in motion control flowchart representation by converting user-defined structured text subprograms of the textual language the graphical elements comprising function interfaces of the corresponding structured text subprograms.

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35. (New) The method according to claim 34, wherein the generated graphical elements are used as language elements of the motion control flowchart.

36. (New) The method according to claim 26, wherein structured text according to IEC 6-1131 is used as the structured textual language.

37. (New) The method according to claim 36, wherein a user can switch between structured textual language, contact plan and function plan as forms of representation for formulation conditions.

38. (New) The method according to claim 26, wherein at least one of the group consisting of a loop and a parallel branch is present as a programming language command in the motion control flowchart view.

39. (New) The method according to claim 38, wherein a parallel branch is initiated an wherein individual commands are initiated in a given interpolator cycle within a respective parallel branch.

40. (New) The method according claim 26, wherein parameters can be set for function blocks by mask input in the motion control flowchart view.

41. (New) The method according to claim 26, wherein function blocks are combined into modules that in turn are presented as function blocks in the motion control flowchart view.

42. (New) The method according to claim 41, wherein modules are interleaved in the motion control flowchart view.

43. (New) The method according to claim 41, wherein the function blocks for the allocation of variables in the motion control flowchart view comprise multiple instructions.

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44. (New) The method according to claim 41, wherein the function blocks representing functions that require a given period of time comprise advance conditions in the flowchart view.

45. (New) The method according to claim 26, wherein the graphical elements of the flowchart are positioned automatically.

46. (New) The method according to claim 26, wherein the graphical elements of the flowchart are linked together automatically.

47. (New) The method according to claim 26, wherein the flowchart is displayed in a form comprising one of the group consisting of reduced form and on or enlarged form.

48. (New) The method according to claim 31, wherein re-translation back into motion control flowchart representation is possible by means of marks in the textual language.

49. (New) The method according to claim 26, wherein steps a) through c) are triggered in a collective step.

50. (New) The method according to claim 26, wherein during processing of the flowchart program a currently processed graphical element is displayed.
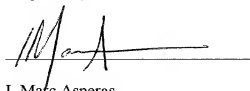
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REMARKS

Upon entry of this Preliminary Amendment, claims 1 - 32 have been canceled and claims 33 - 50 are pending. No new matter has been added.

The Amendment is voluntary and made for the purpose of more distinctly pointing out and claiming the subject matter of the invention. The Amendment is not made for purposes of patentability, nor does it narrow the scope of what is claimed.

Authorization is given to charge Deposit Account No. 19-2179 for any fee due in connection with this communication.

Dated: _July 24, 2001_

Respectfully submitted,

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